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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,602	08/16/2006	Hiroyuki Kyushima	46884-5500	2693
55694 7590 04/01/2010 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209				
EXAMINER HOLLWEG, THOMAS A				
ART UNIT 2879		PAPER NUMBER		
NOTIFICATION DATE 04/01/2010		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DBRIPDocket@dbi.com
penelope.mongelluzzo@dbi.com

Office Action Summary

Application No.

10/589,602

Applicant(s)

KYUSHIMA ET AL.

Examiner

Thomas A. Hollweg

Art Unit

2879

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-11, 13, 15 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-11, 13, 15 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledgement of Amendment After Final

1. Applicant's Amendment After Final of March 16, 2010, is acknowledged. Claims 14, 19 and 21 are canceled. No claims are added. Claims 1-6, 8-11, 13, 15 and 17 are currently pending.
2. The examiner has carefully considered Applicant's arguments regarding the disclosure of a silicon anode in the verified English language translation of JP 2004-040405. Although this document does not expressly disclose that the anode is comprised of a silicon material, the examiner acknowledges that there is sufficient implication that the anode is formed from the portion of the silicon substrate 52 to support the disclosure of an anode comprising a silicon material.
3. For this reason, the reference Syms, U.S. Patent No. 7,294,954 is disqualified as prior art regarding this feature. Therefore, the finality of the Office Action of December 17, 2009, is withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
5. **Claims 1-6, 8-11, 13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Then et al., U.S. Patent No. 5,568,013, in view of Burlefinger et al., U.S. Patent No. 6,492,657 B1.**

6. **With regard to claim 1**, in figures 13-17, Then discloses a photomultiplier comprising: an enclosure (80) having an inside kept in a vacuum state, said enclosure whose at least part is constructed by a glass substrate (98) having a flat part; a photocathode (90), accommodated in said enclosure (80), emitting a photoelectron to the inside of said enclosure in response to light captured through said enclosure; an electron multiplier section (16), arranged on a predetermined area of the flat part of said glass substrate (98), for multiplying in a cascading manner the photoelectrons emitted from said photocathode; and an anode (104), arranged on an area excluding the area where said electron multiplier section (16) is arranged on the flat part in said glass substrate (98), for taking out electrons having arrived thereat among electrons multiplied in a cascading manner in said electron multiplier section (16) as a signal (col. 6, line 62 – col. 7, line 36).

7. Then does not expressly disclose that said anode is comprised of a silicon material.

8. Burlefinger, in figure 4a, teaches a photomultiplier having an anode (22) where the anode is comprised of a silicon material (Abstract; col. 2, line 42 – col. 3, line 43).

9. At the time of invention, it would have been obvious for a person having ordinary skill in the art to construct the Then photomultiplier where said anode is comprised of a silicon material, as taught by Burlefinger, so that the anode can be constructed at the same time as the electron multiplier section.

10. **With regard to claim 2**, in figures 13-17, Then discloses that said enclosure (80) comprises a lower frame comprised of a glass substrate (98); an upper frame (86)

opposing said lower frame; and a side wall frame (40), provided between said upper frame (98) and said lower frame (86), having a form surrounding said electron multiplier section (16) and said anode (104) (col. 6, line 62 – col. 7, line 36).

11. **With regard to claim 3**, in figures 13-17, Then discloses that said electron multiplier section (16) and said anode (104) are arranged on the flat part of said glass substrate (98) while in a state separated by a predetermined distance from said side wall frame (40) constituting a part of said enclosure (80) (col. 6, line 62 – col. 7, line 36).

12. **With regard to claim 4**, in figures 13-17, Then discloses that said side wall frame (40) is comprised of a silicon material (col. 3, lines 48-61).

13. **With regard to claim 5**, in figures 13-17, Then discloses that said upper frame (86) is comprised of a glass material (col. 7, lines 8-9).

14. **With regard to claim 6**, in figures 13-17, Then discloses that said electron multiplier section (16) is comprised of a silicon material (col. 3, lines 48-61).

15. **With regard to claim 8**, in figures 13-17, Then discloses that said electron multiplier section (16) is comprised of a silicon material (col. 3, lines 48-61), said electron multiplier section (16) and said anode (104) are in direct contact with and fixed to the flat part of said glass substrate (98) (col. 6, line 62 – col. 7, line 36).

16. **With regard to claim 9**, in figures 13-17, Then discloses that said electron multiplier section (16) and said sidewall frame (40) are comprised of a silicon material (col. 3, lines 48-61), said electron multiplier section (16), said anode (104) and said side wall frame (40) are in direct contact with and fixed to the flat part of said glass substrate (98) (col. 6, line 62 – col. 7, line 36).

17. **With regard to claim 10**, in figures 13-17, Then discloses that said upper frame (86) is comprised of a glass material (col. 7, lines 8-9); and wherein said upper frame (86) is in direct contact with and joined to said side wall frame (40) such that said upper frame (86) and said lower frame (98) sandwich said side wall frame (40) therebetween (col. 7, lines 25-33).

18. **With regard to claim 11**, in figures 13-17, Then discloses that said upper frame (86) has a transmitting window for taking light into said enclosure (80) (col. 7, lines 8-9).

19. **With regard to claim 13**, in figures 13-17, Then discloses a method of manufacturing the photomultiplier according to claim 2, said method comprising the steps of: preparing said lower frame (98), comprised of a glass material, constituting a part of said enclosure (80); preparing said side wall frame (40) constituting a part of said enclosure (80), said side wall frame being formed together with said electron multiplier section (16) by etching a single silicon substrate; preparing said upper frame (86) constituting a part of said enclosure (80); and fixing said side wall frame (40) to said lower frame (98) together with said electron multiplier section (16) and said anode (104) while making said side wall frame (40) be in direct contact with said lower frame (98) (col. 3, line 48 – col. 4, line 8; col. 6, line 62 - col. 7, line 36).

20. Then does not expressly disclose that the anode is formed together with the side wall frame and the electron multiplier section.

21. Burlefinger, in figure 1, teaches a photomultiplier having a side wall frame (21) being formed together with an electron multiplier section (24/26) and an anode (22) by etching a single silicon substrate (col. 2, line 42 – col. 3, line 43).

22. At the time of invention, it would have been obvious for a person having ordinary skill in the art to construct the with the method disclosed by Then, where the anode is formed together with the side wall frame and the electron multiplier section, as taught by Burlefinger, because forming these elements together greatly simplifies that construction of the device.

23. **With regard to claim 15**, in figures 13-17, Then discloses a method where said upper frame (86) is comprised of a glass material; and wherein said upper frame (86) is in direct contact with and joined to said side wall frame (40) such that said upper frame and said lower frame (86) sandwich said side wall frame (40) therebetween (col. 6, line 62 - col. 7, line 36).

24. **With regard to claim 17**, in figures 13-17, Then discloses a method where said upper frame (86) is formed with a transmitting window for taking light into said enclosure (80) (col. 7, lines 8-9).

Conclusion

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas A. Hollweg whose telephone number is (571) 270-1739. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm E.S.T..

26. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

27. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TH/

/NIMESHKUMAR D. PATEL/
Supervisory Patent Examiner, Art Unit 2879